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REMARKS

Claims 1-41 are pending in the above identified application. The Examiner has rejected claims 1-4, 10-19, and 32-41. The Examiner has objected to claims 5-9 and 18-31. In this amendment, claims 1, 2, 13-17, 28, 32, 35, 36-38, and 41 have been amended for clarity. In the claims, references to a "receiver" have been replaced with references to a "demodulator" to better conform to the figures of the application. Further, claims 28 and 32 have been amended to replace "channels" with "transmission bands" to be consistent with the claims from which they depend. References to "transmitters" have been replaced with "modulators" again to better conform with the figures of the application. Other amendments to the claims are further explained below.¹

Examiner's Interview of July 24, 2006

Applicants would like to thank Examiner Tran for discussing the issues regarding this application with Inventor Sallaway and the undersigned in an interview held on July 24, 2006 (the Interview). Our discussion helped tremendously our understanding the Examiner's position, which allowed amendments to better clarify the invention in the claims.

During that interview, the Examiner's rejection of claim 1 over the Chan patent (U.S. Patent No. 6,259,745) was discussed. Proposed amendments to the claims included amending claim 1 to recite "a single differential conductive pair" instead of --a single transmission medium-- to further distinguish the claimed invention over the teachings of Chan. Also, we

¹ The Examiner has made numerous characterizations of the claims and the prior art in the Office Action in which Applicants do not necessarily agree. Applicants do not acquiesce in the Examiner's comments even if those comments are not addressed in this response.

discussed amending claim 1 to recite "the cross-channel interference canceller coupled to receive the signals from all of the plurality of transmission bands" instead of --the cross-channel interference canceller coupled to receive the signals from each of the plurality of transmission bands-- to better distinguish the cross-channel interference filter claimed in claim 1 from the teachings of Chan. Additional amendments discussed included replacing --receivers-- with "demodulators" in order to be more consistent with the figures of the application.

A discussion of why claim 1, especially as amended, is allowable over Chan was then undertaken. A written presentation pointing out the allowability of the claims over the prior art, as discussed during the interview, is provided below

Claim Objections

The Examiner has objected to claims 13-17 under 35 U.S.C. 112, second paragraph, "as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention." In response, claims 13-17 have been amended to clarify these claims. Specifically, references to the term "portion" have been removed.

Claim Rejections Under 35 U.S.C. § 103

Claims 1-2, 11-15, and 32-41

The Examiner has rejected claims 1-2, 11-15 and 32-41 under 35 U.S.C. § 103 as being unpatentable over Chan (U.S. Patent No. 6,259,745) in view of Wang (U.S. Patent No. 5,822,368).²

As discussed with the Examiner during the Interview, Chan does not teach at least two aspects of the invention claimed in claim 1: 1) Chan does not teach “the plurality of transmission bands being transmitted on a single differential conductive pair”; and 2) Chan does not teach “a cross-channel interference canceller coupled to the plurality of demodulators, the cross-channel interference canceller coupled to receive the signals from all of the plurality of transmission bands transmitted on the differential conductive pair.”

With regard to the first point, as shown in Figure 1 Chan transmits data between the four transceivers in transceiver block 2 and the four transceivers in transceiver block 3 over 4 twisted copper pair (4a through 4d). Each of the twisted copper pair 4a through 4d carries a single channel of data, not “a plurality of transmission bands” as recited in claim 1. As stated in Chan,

FIG. 1 . . . includes two main transceiver blocks 2 and 3, coupled together with four twisted-pair cables. Each of the wire pairs is coupled between respective transceiver blocks and each communicates information developed by respective ones of four transmitter/receiver circuits (constituent transceivers) 6 communicating with a Physical Coding Sublayer (PCS) block 8.

² The Examiner initially indicated that claims 1-4 and 32-41 were rejected under the combination of Chan and Wang, but discussed claims 1-2, 11-15, and 32-41 instead. Claims 3-4 and 10 were rejected over the combination of Chan, Wang, and Baker.

(Chan, col. 6, lines 27-34). Further, Chan teaches that "FIG. 2 depicts only one of the four 250 Mb/s constituent transceivers which are configured in parallel fashion and which operate simultaneously to effect 1 Gb/s in order to effect 1 Gb/s communication." (Chan, col. 7, lines 31-34). Further, Chan teaches that "[s]ince the coding scheme for gigabit communication is based on the premise that signals carried by each twisted pair of wire correspond to a 1-dimensional (1D) constellation and that the four twisted wire pairs collectively form a 4-dimensional (4D) constellation" (Chan, col. 7, lines 55-59). Therefore, Chan teaches that each channel is transmitted over a single twisted copper pair. Chan does not teach that a "plurality of transmission bands . . . transmitted on a single differential copper pair" as is recited in claim 1.

Further, Wang does not cure this defect in the teachings of Chan. Wang teaches an RF receiver and not a "plurality of transmission bands . . . transmitted on a single differential copper pair," as is recited in claim 1.

With regard to the second point, Chan does not teach "a cross-channel interference canceller coupled to the plurality of demodulators, the cross-channel interference canceller coupled to receive the signals from all of the plurality of transmission bands transmitted on the single differential conductive pair," as is recited in claim 1. As pointed out by the Examiner, Figure 2 of Chan shows filters 25, 26, and 27, which receive signals from each of the transmitters in one of the transceiver blocks 2 or 3. (See, Chan, col. 7, lines 66, -col. 8, line 31). However, none of these filters receive signals from more than one of the single twisted copper pair 4 and therefore only receives data from a single channel received into transceiver 6. Therefore, Chan does not teach "a cross-channel interference canceller coupled to the plurality of demodulators, the cross-channel interference canceller coupled to receive the signals from all of the plurality of

transmission bands transmitted on the single differential conductive pair," as is recited in claim

1. Again, Wang does not cure the defects in the teachings of Chan.

Claims 2, 11-15, and 32-34 depend from claim 1 and are therefore allowable over the combination of Chan and Wang for at least the same reasons as is claim 1.

Claim 36 has been amended to recite "receiving a transmitted signal from a single conductive pair into a plurality of demodulators; each of the plurality of demodulators down-converting the transmission signal by a set carrier frequency to receiving one of a plurality of transmission bands" and "cancelling the cross-channel interference in each of the plurality of demodulators by correcting each received signal corresponding to the plurality of transmission bands with signals received from all of the other ones of the plurality of demodulators." For at least the same reasons as in claim 1, therefore, claim 36 is allowable over Chan in light of Wang. Claims 37-40 depend from claim 36 and are therefore allowable for at least the same reasons as is claim 36.

Claim 41 has been amended to recite "means for transmitting data into multiple channels on a single differential conductive pair" and "means for correcting the data from each of the multiple channels for cross-channel interference, the means for correcting including means for receiving data from all of the other multiple channels." Claim 41, then, is allowable over the combination of Chan and Wang for at least the same reasons as is claim 1.

Claims 3-4 and 10

The Examiner rejected claims 3-4 and 10 under 35 U.S.C. 103(a) as being unpatentable over Chan in view of Wang and further in view of U.S. Patent No. 6,163,563 ("Baker"). The allowability of claim 1 over the combination of Chan and Wang is discussed above. Baker does

not cure the defects in the teachings of Chan and Wang. Claims 3-4 and 10 depend from claim 1 and are therefore allowable over the combination of Chan, Wang, and Baker for at least the same reasons as is claim 1.

Allowable Subject Matter

The Examiner has indicated that claims 5-9 and 18-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Because, as discussed above, claim 1, from which claims 5-9 and 18-31 depend, is allowable, Applicants have not amended claims 5-9 and 18-31 to be independent claims in this amendment.

Conclusion

Furthermore, Applicants respectfully point out that the final action by the Examiner presented some new arguments as to the application of the art against Applicants' invention. It is respectfully submitted that the entering of the Amendment would allow the Applicants to reply to the final rejections and place the application in condition for allowance.

Finally, Applicants submit that the entry of the amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims.

In view of the foregoing remarks, Applicants submit that this claimed invention, as amended, is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicants therefore request the entry of this Amendment, the Examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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